13-19 February 1986

It's the best selling weekly

Vol 5 No 7

Spectrum 128 – it's here!

SINCLAIR'S long-awaited Spectrum 128 is to be launched in the UK today (Thursday). The machine is being demonstrated with a number of third-party peripherals and software to the trade and press. It is expected to be in the shops very shortly – by the end of the month.

The 128K Spectrum will be priced at £179.99. The package will comprise some bundled software, which will probably take advantage of the improved sound chip and Midi facilities of the new machine. However, the British 128 does not include the numeric keypad which was a built-in feature of the Spanish 128 launched in Barcelona last September. The numeric keypad will be available separately from Sinclair for £19.95.

Other software and hardware which has been developed specifically for the Spectrum 128 includes *Knight-Tyme* from Mastertronic,

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INSIDE THIS WEEK

- *Commodore's new music packages reviewed (pictured above)*
- *Atari 520 ST series – the potential of Gem*
- *Spectrum 128 preview*

Hewson's Technician Ted for the 128

See pages 4 & 9 for more 128 news

INSIDE) NEW PRODUCT NEWS SECTION FOR HARDWARE—P5

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EDITORIAL

Sinclair is launching the 128 in this country that week, its first 'new' machine since the misplaced and mistimed QL in January 1984 In that time the company has changed in the common perception from a visionary maverick which could do no wrong to a near bankrupt whose idiosyncrasy led it up a whole series of near fatal cul de sacs.

The Spectrum 128 for the first time sees Sinclair following a trend (begun by Amstrad) rather than starting it – beefing up existing machines by bank switching On first impressions, it also doesn't appear to be so astonishingly priced as previous Sinclair offerings £179 98 is perilously close to the £138 you pay for Amstrad CPC464 with green screen monitor and tape player Mind you, it's too much to call it overpriced when offerings like the Acorn Master series so much more richly deserve the term

Yet the 128 could, and perhaps should, do well Sinclair fans are among the most loyal in the world, and many will have bought their machines in the early days of its life They can keep their existing software and peripherals and perhaps decide that now is the time to replace their much loved but battered machines

Sinclair has handled the launch of the new machine considerably better than in the past Most significantly it has devoted much effort to ensure that there is good software support for the 128 at its launch. That and loyalty and familiarity with the system, plus a few new elements like, for example, the sound facilities, may be enough for the machine to sell reasonably well. Presumably the costs involved are small enough that even modestly good sales will make the whole enterprise worthwhile

But one thing remains clear, even if the 128 does well it is, at best, six months grace Sinclair must make very good use of that time (and it is to be hoped, money) in order to beat off Amstrad's determined attack on its number one position. There must be a new mass market machine this year

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Computer Trade Association Magazine of the Year

Commodore rules out bankruptcy question

COMMODORE has dismissed the prospect of filing under the US's Chapter 11 bankruptcy clause as 'totally out of the question' (see *Popular Computing Weekly*, February 6)

A spokesman for Commodore International in New York said, "There is no truth in the speculation whatsoever" American financial analysts had expressed doubts about it's ability to survive without the protection of the Chapter 11 ruling

The company's bankers have now extended deadlines for Commodore to repay money to the banks

"Commodore had a very good Christmas – we sold over 1 1 million computers wordwise, and we have been able to make substantial repayments to the bank," the spokesman added. Commodore is currently estimating Amiga sales in the US at "the lower end of the 40,000-60,000 range".

Commodore expects to announce its quarterly results this week, and predicts that the sales figures will be over $339 million However, the cost of the closures of the plant at Corby and an American semi-conductor facility will produce a net loss

Atari to shelve plans for 260ST?

IT NOW appears that Atari's long-awaited 260ST will not be appearing in this country, despite being previewed at last September's *Personal Computer World* show.

In its place, Atari is apparently going to offer a stand-alone 520ST (no disc drive or monitor) This product was announced at last month's CES in Las Vegas for the US market Atari is also considering offering a 520ST with a built-in 3½ disc drive situated under the keyboard but again without monitor This was the format in which the 260ST was previewed at the *PCW* show

Price of the disc-less model may be around £400

Spectrum 128 arrives

◄ continued from page 1

the follow-up to the current hit Spellbound, Ocean's *Never-Ending Story* (an enhanced version), *Daley Thompson's Supertest 128* – with 12 events – and an international version of *Match Day Fornax* from Gargoyle Games (the second in the Siege of Earth trilogy, of which *Marsport* was the first), and *Sweevo's Whirled*, a new version of *Sweevo's World* will also be available Hewson has expanded *Technician Ted*, CRL has done the same with *The Rocky Horror Show*, Rambird has developed *Art Studio 2*, while Audiogenic has written *Icon Graphix*.

Peripherals are expected to be wholly compatible with the 48K Spectrum, but Cheetah has enhanced its Specdrum drum kit.

Sinclair will probably not drop the 48K Spectrum Plus immediately, as recent market research reports (see *Popular Computing Weekly* February 6) confirm that that the machine is still attracting at least a third of the UK market However, it is unlikely that Sinclair will still be producing the 48K Spectrum next Christmas.

It is likely that some form of exclusivity deal has been struck with Dixons for selling the Spectrum 128, following the success of Dixon's bundled Spectrum Plus pack.

Commando conversions

ELITE'S Christmas hit *Commando* is to be converted for three new machines

The first new version to appear will be for the C16, at the end of this month. In March the company will release Amstrad and BBC versions

Fleet Street Editor released

MIRRORSOFT has now released *Fleet Street Editor* for the BBC – the first of a planned series of releases over a range of machines, designed to provide sophisticated page design and layout facilities on home micros

Fleet Street Editor is a mixture of simple word processor, graphics library artist program and page designer Preset or specifically designed graphics may be mixed with text to create the equivalent of a newspaper or magazine page

Fleet Street Editor, packaged with a manual that also includes general advice on page design, costs £39.95

Virgin plays in FA Cup

VIRGIN is about to release a program based on the FA Cup

The gameplay centres on the strategy of picking the right team to win the cup, rather than actually playing football on screen

Much of the game design has been done by Tony Wilson, who compiles an annual Football Association and Football League directory He has calculated figures for each team in the program for their strengths and weaknesses

Virgin promises to constantly update the statistics so that it is not applicable only for this season

The FA Cup will be released for the Spectrum, Commodore and Amstrad Details from Virgin at 2 Vernon Yard, 119 Portobello Road, London W10 (01-727 8070).

Incentive broadens GAC's appeal

THE highly acclaimed *Graphic Adventure Creator* from Incentive is to be converted to a number of machines in the next few months

Currently only available for the Amstrad, *GAC* will be released for the Spectrum, Commodore and BBC machines in May All the versions will include the facility to create graphics

On cassette, the new *GACs* will cost £22 95 On disc – only for Commodore and BBC – it will be priced at £27 95

In the summer, Incentive hopes to bring out a disc version for the Amstrad, called *GAC Plus* This will enable users to write adventures up to 150K long

Graphics from GAC

BBC Sampler

A SOUND Sampler for the BBC B series has been introduced by BML Electronics, of Milton Keynes

The Barry-Box will sample sounds, and store them in memory using 8-bit digitisation.

The recorded sound can then be stored on tape or disc and played back at any speed, backwards or forwards The unit plugs into the BBC's 1MHz bus

Priced at £79.95, the package includes all cables microphone and Rom software Further details from BML, 24 Larch Grove, Bletchley, Milton Keynes (0908 640805)

LAST week's News Desk piece on Kempston's mouse and Rainbird's *Art Studio* package should have read that the *Art Studio* was being packaged with the mouse for £69.95, not vice versa. The stand-alone price for the *Art Studio* is £14.95.

CBM printer

COMMODORE is to introduce a new printer to serve its entire product range

The new MPS 1000 provides both a Centronics and Commodore serial interface which gives it compatibility throughout the range A dot matrix model, it prints at 100 cps in draft mode and 20 cps in NLQ mode

The MPS 1000 should be available at the end of the month, priced at £249

C128 Magic Monitor interface

COMMODORE 128 owners can now buy a monitor interface to enable them to obtain 80-column displays from the older Commodore composite video monitor

Robtek (formerly Robcom) has now launched its Magic Monitor interface which connects the RGBI and composite video ports on the 128 to the video and audio ports on the front of the monitor A switch on the interface allows you to flip between 40 and 80-column modes

Daisywheels from Sanyo

TWO new compact daisywheel printers have been announced by Sanyo – the PR3000 and PR5200

The PR3000 will retail at around £230. It offers bi-directional printing at 10 characters per second, using a maximum paper width of 8½ inches It provides a full complement of 91 characters

The PR 5200 will sell for around £340. Its speed is 20 cps (again bi-directional) on a Diablo type daisywheel Both models use a Centronics compatible parallel interface

Further details from Sanyo at Sanyo House, Otterspool Way, Watford, Herts

Filter plug

A NEW three-pin plug has been produced which will filter out electrical interference for equipment such as computers

Appliances such as electric drills, washing machines and vacuumn cleaners, not necessarily being used in the same room, can all cause variations in the electrical current being supplied. The Mains Filter Adaptor from Duraplug provides a continuous 'laundering' of the electrical supply to the micro The plug costs £18

Duraplug is at Westwood Works, Margate Road, Broadstairs, Kent (0843 68771)

Letters

C64 uses

Here are some pokes for Commodore 64 users which readers may find of some use

Poke 788, 52 – Stop key disabled. Also stops TI clock

Poke 788, 49 – Stop key enabled

Poke 792, 193 – Run/Stop – restore disabled Also disables RS-232

Coke 792, 71 – Run/Stop – restore enabled

Print CHR (8) – CBM shift disabled

Print CHR (9) – CBM shift enabled

Poke 774, Peek (65532) Poke 775, Peek (65533) – list disabled. Total reset.

Poke 774, Peek (790): Poke 775 Peek (791) – list disabled. Partial reset

Poke 650, 64 – Key repeat disabled

Poke 650, 128 – Repeat on all keys

Poke 650, 0 – Repeat on cursor keys

Poke 788, 70 – CBM 64 disabled. Switch computer off, then on again

Wall 207, 255, 1: Poke 204, 255 Poke 205, 1 – Disable cursor

Gary Burrows
41 Rutland Avenue
Halewood
Liverpool

Ideal micro

I was intrigued to read in Vol 5 No 5, the article 'Choose Your Ideal Micro'. It seems that there is a great similarity between peoples' ideal micro and my own, an Enterprise 128

1) The Enterprise 128 possesses a Z80 running at 4 Megahurts

2) 128K Ram expandable to 4 megabytes

3) EXOS, Enterprise's own operating system, is arguably the most powerful system of a machine under £500

4) Languages IS Basic – again more powerful than the rest, Pascal, IS Forth IS Lisp, Assembler

5) Four channels, eight octave of true stereo

6) With the EXDOS interface you can use up to four disc drives in any combination of these sizes, 5, 3, ½ and 5¼ inch as well as run ISDOS for CPM compatibility

7) Built-in joystick with connections for two extra.

8) Enterprise's own brand colour monitor for £175

9) Keyboard, not the best I admit, but perfectly adequate

10) The video processor in the Enterprise can display 80 column, 40 column 256, 16, 4, 8 high and lo-res colour modes all on the screen at the same time (without having to resort to tricks), and has the ability to display a resolution of 672 by 512 down to 2 by 9 and use down to under 1k of Ram, plus pointer based screen mapping for speed

11) Ports Connections for TV, colour and black and white monitors, stereo, twin cassette ports, serial and parallel for printer and modem connections, etc, net working, twin control ports and a 56-way control bus

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60 Holdenhurst Ave
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London N12 0HX

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Apologies

In Volume 5, No 5, of your magazine you printed a letter from a Mr A P Coutanche concerning membership of Amsclub. Mr Coutanche did indeed go through the troubles he described. But by the time his letter was printed in your magazine, he had received his Amsclub pack I would be pleased to give Mr Coutanche his money back if he gets in touch with me

David Baxter
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42 Mount Stewart Street
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Sounds interesting

First impressions of the 128 from from Peter Worlock

Despite the much-publicised troubles of the last year, Sinclair is still the leading supplier of personal computers in Britain. So the launch of any new machine from the Sinclair stable is a major event

The machine in question is the Spectrum 128 although it isn't exactly new since it was launched in Spain several months ago This week sees its introduction in the UK, complete with English language Rom and keyboard.

At first sight, the 128 looks exactly like a Spectrum Plus Its only distinguishing feature is the legend "128K" next to the Spectrum colour flash in the lower right of the keyboard

Closer inspection, however, reveals a few more differences There have been several changes to the input/output ports on the machine which now includes an RGB video interface together with the usual television port The cassette EAR and MIC sockets have been moved to the left-hand side, next to a new RS232 interface

The introduction of these new sockets makes the 128 much easier to connect to standard peripherals such as monitors, printers and modems Unfortunately, the RS232 connector is better suited to modems than printers since it uses what looks like a British Telecom in-line jack socket rather than the more common Din-type or D-type connectors. What's missing, that might have been expected, is a built-in joystick port

Turning the machine on reveals more differences The familiar Spectrum start-up screen is replaced by a colourful menu display offering five choices

First is an auto-load command for cassette Just press *Enter* and the 128 generates a *Load*"" A nice touch.

Second, you can select 128 Basic, which offers extended control of the new machine

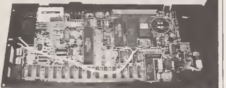
Included in the new Basic is a *Play* command for the enhanced sound abilities of the 128 (see below), and a new screen editor

The editor is a move towards the more common editing methods used by Commodore and Atari, which will make it easier for existing owners of those machines to move to the Spectrum 128 Present Spectrum owners will find things a little harder because the idiosyncratic single-key entry of Basic commands is gone All commands now need to be typed in full

But the editor has several good points, and retains an automatic though altered syntax checker If the Basic line is correct, the editor makes a pleasant beep and moves to the next line If the line is wrong the editor makes a less pleasant burp, and the cursor flashes red

The third option is calculator mode, which is a bit of a fudge It allows you to type in, for example, *Sin*(10)*6 3 and get an answer, whereas in Basic you'd have to type *Print Sin*(10)*6 3

In the absence of any documentation, it's difficult to comment on the fifth option, Tape Test, but option four is straightforward Spectrum 48K Basic Effectively this turns the 128 into a Spectrum Plus ensuring compatibility with your old Basic programs.



The Spectrum 128 circuit board

Inside the 128

Opening up the new machine (not really recommended) reveals the major differences The new circuit board is considerably different, holding several new chips, the extra Ram, and the new interfaces The board itself is obviously bigger to accommodate all this

What's missing is the only internal speaker that condemned old model Spectrums to musical uselessness Sound output is now through the TV or monitor This immediately makes the 128 sound better, but there's more because it uses the General Instruments AY series sound chip – the same as that found in the Amstrad series of machines In fact, the 128 sounds better than the Amstrad for practical purposes, since the Amstrad uses an internal speaker

What the chip provides is three voices, or sound channels, volume control, and programmable envelopes It may be necessary to use machine codes, or complex *Out* commands from Basic to fully control all these facilities but Basic at least gives you the *Play* command for simple musical sequences

The memory is configured in banks of 16K and looks like this the first bank is a Rom block containing the operating system and Basic, the second 16K is dedicated screen Ram, the third block is free memory Block four allows you to switch in any of the other banks giving access to all 128K of memory

One of the best new features is that the 128 has two display areas This means that you can display one screen while writing to the other, then flip them instantly, making possible some complex graphics techniques

The extra memory also raises the possibility of CP/M, although that would mean adding disc drives

Support

Sinclair has enlisted the support of many software and peripheral manufacturers, such that there will be plenty of products for new owners to spend their money on soon after launch

Sinclair is offering an add-on keypad that features numeric keys for use with the calculator option, or for data entry, extra cursor keys for full editing control under the new editor, and a cursor cluster that will make many games easier to play

Familiar names such as Cheetah, DK'Tronics, and Advanced Memory Systems will be offering joystick interfaces, mice and other add-ons, while there is a long list of software companies who have made special conversions to the 128

Verdict

It is difficult to judge the 128 on the basis of this preview, especially in the absence of any full technical documentation There is a chance that the machine supports more features than those listed here the extent of the Midi compatibility, for example, is not yet clear

On the other hand, in the essential areas of memory, storage and pricing, enough is known to make a reasonable judgement. The inclusion of the extra memory in itself is of secondary importance for the moment because it remains to be seen how many new products will take advantage of this facility. That will depend on whether the machine sells in sufficient numbers to make it worthwhile.

If you want a computer primarily for playing games, then unless the 128 is widely and continuously supported it will offer few advantages over the ordinary Plus which will cost roughly £70 less. If you want to run serious applications then the 128 is perilously close in price to the Amstrad 6128 with green screen monitor or even the QL.

Finally, what does the 128 mean to Sinclair? Probably not a lot. It can't have cost the company much since the machine has been in production in Spain for some time, but it doesn't appear likely to gain Sinclair much either. At best it may create enough of a breathing space to allow Sinclair to launch a serious machine – serious meaning one with a real keyboard, real disc drives and a 16-bit chip.

Of course the 128 will sell – it may even sell very well, but no-one should have any doubt that it does nothing to limit potential to swipe Sinclair's crown.

Products

The following are products already announced for the Spectrum 128. The companies involved claim that these products have been extended and enhanced for the 128, which means they won't run on the 48K Spectrums. Check the cassette inlays to make sure you're buying the right version.

Peripherals

Add-on keypad, Sinclair, £19.95
Specdrum drum synthesiser, Cheetah £29.95

Games

The Nexus Mission, Nexus Productions £9.95
Desert Rats, CCS, £9.95
Confrontation, Lothlorien, £9.95
Technician Ted, Hewson Consultants, £7.95
The Rocky Horror Show, CRL, £8.95
I of the Mask, Electric Dreams, £9.95
Sweevo's Whirled, Gargoyle Games, £9.95
International Match Day, Ocean, £9.95
Return to Eden, Level 9, £9.95
The Never Ending Story, Ocean, £9.95
Daley Thompson's Supertest 128, Ocean, £9.95
Knight-Tyme, Mastertronic, £2.99
Lord of the Rings, Melbourne House, £15.95
Bored of the Rings, Silversoft, £9.95
Spitfire 40, Mirrorsoft, £9.95
Fairlight 2, Softek International, £9.95
Barry McGuigan World Championship Boxing, Activision, £7.95
Winter Games, US Gold, £9.95
Gladiator, Domark, £9.95
Rasputin, Firebird, £7.95
Lode Runner, Software Projects, £9.95
I C U P S, Thor, £8.95
Robin of the Wood, Odin Computer Graphics, £9.95
Three Weeks in Paradise, MikroGen, £10.95
Yie Ar Kung Fu, Ocean, £9.95
Dr Blitzen and the Islands of Arcanum, Mirrorsoft, £8.95
Ball Blazer, Activision, £7.99

Utilities

Icon Graphix, Audiogenic, £9.95
Art Studio 2, Rainbird, £2.95
Magus Assembler/Monitor/Analyser, Oasis Software, £19.95
Wham! The Music Box, Melbourne House, £9.95

Applications

The Writer, Softek International, £14.95
Tasword 128, Tasman Software, £19.95

Sir Fred

Now that's what I call music

***Graham Taylor** looks at Commodore's price-braaking music package*

Commodore has recently announced some exciting music packages for the Commodore 64 which give the machine musical facilities powerful enough for it to be regarded as a serious musical tool. In this survey, we look at the elements that comprise the package in detail.

For £299 you get a Commodore 64, a data recorder, a full size five octave keyboard and two pieces of software, *Music Maker 2* and *Sound Studio*. For those who already have a Commodore the package of music hardware and software is £149 99. Either way it's incredibly cheap – but is it any good?

Sound Expander

This is the heart of the music system and provides the powerful sound facilities which make it a viable composing tool. The FM chips are similar to (although a little simpler than) those found in the all-powerful DX7 (just watch the TV to see how many bands have one of those) and are capable of very realistic sounds on eight channels. Particularly effective are percussive timbres like electric pianos and vibraphones and short reedy sounds like oboes and bassoons.

Having eight channels to play around with means (if you wish) complex chords and melody lines – impossible on the three channels of the Sid chip, since one chord requires all the available lines. Most significantly of all, for future software packages using the system, those eight channels may be divided up as you wish among eight different voices, making it possible to have eight differently voiced monophonic parts simultaneously. A medium sized chamber group, if you like.

That said, I should quickly point out that you don't get that facility immediately. The driving software for the FM module has been designed as a 'starting off' package for the novice and inevitably there are restrictions. The two key restrictions are that a) there are only very limited facilities for actual sound synthesis – you basically have to rely on the present sounds – and, b) there is no composing program as such, although you can split the sounds on the keyboard and thus play a bass on one half and a lead voice on the other. There is no mechanism to use more than two voices at once.

Nevertheless, the software you do get to drive the FM module is hardly worthless. What you get, in effect, is a sort of 'super Casio', that gives you a couple of dozen interesting voices to play around with and some easy play features. All the selection commands are a matter of a few function key presses.

The program uses a series of pop-down menus and you move up and down the various options with a cursor. One section lets you choose the voice (obvious names like 'strings' are mixed with odd ones like 'alien sound') another lets you set special options like 'one fingered chord' and 'memory'. One finger means that a chord can be played on the bottom half of the keyboard by pressing, for example, the note C to get a major chord of C or the note C and one other for a minor chord, ie, C minor. Memory simply means that the machine will hold the chord even after you have removed your finger from the key.

Other options control disc access (or tape) and let you load in an alternative bank of voices and music examples. Finally, a curious option called the riff machine produces fully arranged music where the segment of music you hear is dependent on what key you have pressed. It's very clever and quite entertaining (it certainly shows what the sound chip is capable of) but I haven't actually been able to think of a serious use for it as yet.

In summary, though the software only scrapes the surface of what you can do with the module, it gives you sounds to play around with and some help features for the complete novice. Music Sales even includes an easy play book of simplified tunes to get you started.

The Keyboard

Obviously you need something with which to play these marvellous sounds – a keyboard. In the history of keyboard add-ons there have been some real dodos. The temptation has been to cost cut with tiny keys, no feel and few octaves. Mere switch boards in fact.

It isn't the case here. The keyboard with the package is one of the best I've ever seen outside of synthesisers costing £300 or more. Firstly, it spans five octaves – enough for 95% of musicians (the 5% should probably be thinking Steinways instead of Commodores, anyway). The keys are full size, real full size, ie, long as well as wide unlike most synth keyboards.

More subtly the keys 'feel' right, ie, responsive rather than mere switches in disguise. The whole thing is nicely finished with a tough-looking case in metallic gray. My single, rather churlish, complaint is that there is no pitch bend wheel (for being meaningful and emotional during those long solos) which given the effort put into the rest of the keyboard would surely have been a fairly low cost addition. Perhaps there were technical problems?

Other software packages

It's fair to say that both *Music Maker 2* and *Sound Studio* are only tangentally connected to the FM module and keyboard. They are both interesting and useful music packages but do not actual

Music Hardware

ly utilise the facilities of the sound chip and they cannot be played by the real keyboard. Nevertheless, they are connected into the package in terms of the educational facilities they offer which will, in the long run, help you get more from your new system.

Music Maker II

This is a slightly altered form of *Music Maker I* and comprises a plastic keyboard which fits over the C64 Qwerty keys and presses them down as you press the music keys. It's very simple and you can't play fast but in a fashion it works.

The important part of *Music Maker* is the software and it really takes a number of musical education ideas derived from Casios and presents them graphically. The intention of the program is to help you pick out simple tunes using the keyboard and give you some sense of rhythm and keys.

There are a number of variations on this basic idea. Firstly you can load in a demo tune (there are many provided and Music Sales also provide more tapes with things like *Beatles* hits on them, suffice to say they don't sound quite like the originals). You can simply play this note and see the notes displayed on a musical stave or you can try to pick out the melody yourself – the computer will wait until you hit the right melody key before continuing with the song. It's a way of learning to associate the right note on the keyboard with the right note in the tune.

Other options let you enter a melody of your own choice, then play that melody along with a (simple) rhythm track merely by pressing one key with the right timing. Good for those who know what they want to play but have trouble doing it in time. This package differs from *Music Maker I*, in that whilst it lacks some of the latter's synthesis options it provides better display of the music on screen.

Sound Studio

This package combines two elements. Using pull-down menus and helpful screen illustration it helps you to program the Sid chip as you would a usual synthesiser. You can then record those sounds via either the *Music Maker* keyboard or (if you have Midi) via some other keyboard.

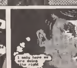
The synthesiser section is quite powerful, letting you control more or less all of the Sid parameters including filter, pulse width modulation, envelope and wave form. You can save your sounds to tape or disc.

The real time recorder is a form of sequencer – you play your musical parts on to a number of tracks (maximum of six) entering them either in step time (that is note by note at whatever pace you like) or real time (you actually play the keyboard in time with a metronome pulse). Either way, you can then correct what you have done with a powerful editing facility, changing not only pitch and tempo, but even the volume.

The Commodore music package represents a powerful commitment by the company to music. With it your Commodore becomes a 'real' synthesiser, but more than that there is the potential for a powerful composing tool and instrument for musical education.

I can't wait for the composer packages and the Midi cartridge — both promised soon. Now is the time to jump on the music bandwagon and this is one of the best value packages you'll find.

The Rogue Program



The Gem in the crown

David Lawrence and Mark England delve into Gem and its potential

The name CP/M represents a whole family of operating systems, the complex programs that control the hardware of a micro-computer system. The ST's TOS operating system is based on one of the latest of the family, CP/M 68K, specially designed for machines running a 68000 processor. The difference between TOS and CP/M 68K is that whereas the standard CP/M operating system was designed for any 68000 machine, TOS adapts it to make the fullest use of the facilities that the ST's advanced hardware provides. In addition to the standard disk handling functions TOS also provides a number of capabilities to extend the Gem system, like the ability to handle the mouse directly, screen dumps and hierarchical directories.

One major difference between the ST and other, non-Gem micros which use a version of CP/M 68K is that on the ST the user is limited in the extent to which the operating system can be addressed directly. The main way in which TOS is accessed is through the higher level Gem system and indeed there is no other means without the use of a specialist program called a "command line interpreter", which allows commands to be entered from the keyboard and then translated into a form that TOS will understand. Since no command line interpreter is supplied with standard STs, the question is a little academic for most users who don't want to buy extra specialist tools.

More important to the average ST user is the Gem system designed by Digital Research. Gem stands for Graphics Environment Manager. Gem is not really a full operating system like CP/M or MSDOS because it is not designed to handle every aspect of the machine on which it runs. Gem on an IBM PC is designed to run in conjunction with the PCdos operating system and Gem on the ST relies for many tasks, like the handling of discs, on TOS.

The real function of Gem on the ST is revealed in that name Graphics Environment Manager. Most previous operating systems were designed to handle all the functions of the machine and it was left to the user to go to the considerable trouble of learning all the ins and outs of the commands which would control the Dos – in other words the Dos was aimed at the machine, not the user. The disadvantage of this was that while professional users were often able to make great use of the facilities that the Dos provided, most owners of personal computers used only a tiny percentage of the facilities that were hidden away behind incomprehensible commands and lists of parameters.

Gem is intended to be other half of the operating system, the half that takes the user as seriously as previous operating systems have taken the machinery. The object of Gem is to make every aspect of the functioning of the machine as clear as possible to the average user so that they can take full advantage of its power. It is an "environment" because when you sit down at a Gem machine you interact, not so much with the machine as with Gem itself. It is a manager because all your commands are issued to Gem and all your work done through Gem. It is a *Graphics* Environment Manager because the particular way that Digital Research has chosen to reveal the working of the machine to the user, is to represent the functions as a stunning variety of pictures.

Though it will not be apparent to ST users, because their Gem system will eventually come encapsulated in Rom, the standard Gem system is based on a number of different files which perform very different tasks, the most important being Gem VDI and Gem AES.

GEM VDI

Gem VDI is a program and a library of functions which provides a quite bewildering range of graphics facilities. The idea of Gem VDI is that, for programmers, complex graphic tasks may be accomplished by fairly simple commands. The machine on which the job is being done is almost irrelevant, since the commands issued will always be the same – it is Gem VDI which will be configured to the particular hardware. Not only that, the software writer does not even need to make special provisions to output the graphics to a screen or printer. Provided that Gem VDI is told what design to create and which device to send it to, all the translation to make it into a proper image on the printer, or on the screen, or on a graphics plotter, or in fact any graphics device the system is configured to use, all of that work will be done by Gem VDI which will select the correct "device driver" program.

Gem Desktop

The ability to handle different devices is particularly important in Gem because the VDI does not only handle requests for output to physically separate devices, it can also distinguish between what are known as "virtual devices", or devices which the system defines as being different even though they may use the same piece of equipment, like separate windows on a screen. When you open a particular window in Gem, what you are doing is calling upon Gem VDI to work with that "device" for the moment, even though the device in question is a specific area of screen memory.

If that is the overall purpose of VDI, what can it actually do with its devices that makes it so special? A very partial and very simplified list might run.

a) It can accept straightforward co-ordinates either along its own 32767 * 32767 sized working area, or along a more normal 640 * 400 sized area corresponding to the screen co-ordinates of the ST and translate from those co-ordinates into whatever is needed for an actual screen or printer.

b) It can work with a variety of text fonts which can be changed during the course of an application.

c) It can display graphic items drawn from specially created files and create such files, so that an application under Gem can have its own library of specialised pictures which are displayed instantly.

d) It can define a rectangle within which graphics are to be confined and ensure that only visible portions of a design are displayed, ie, a window.

e) It can produce a variety of shapes on the basis of fairly limited commands.

f) It can set characteristics for what it can display, such as colour and different line types.

g) It can work with rectangular blocks of design which can be moved freely over other items in a display – what are sometimes known on other systems as "sprites".

h) It can accept a variety of inputs from keyboard and mouse.

i) It can handle separate mouse and text cursors.

j) It can perform a variety of text related functions such moving the text cursor, erasing text lines, setting text in inverse video and printing a hard copy of text.

All of these capabilities and a wide range of others which are more specialised are available to anyone creating software on a Gem-based machine, which is why Gem software is usually so attractive.

Gem AES

So far we have talked about the visible side of Gem, the

Virtual Device Interface. There remains another part of the system whose apparent invisibility is the indication of its power.

From the point of view of the user Gem appears to be a very simple system. We have already noted that in order to run properly, Gem relies on there being a disc operating system somewhere in the memory, controlling the vital disc functions.

In addition, the complex Gem VDI program must be available to handle the graphics for a program, and the input/output. Now we are saying that Gem can also allow an application, a normal program like a word-processor, to be running alongside these, and on top of that application program the system is still capable of dealing simultaneously with three "accessories", or programs which are available but in the background.

Clearly, what we have here is a system of immense complexity, however simple it is to use, and the key is the program called Gem AES, or Gem Application Environment Services.

Gem AES is the manager which allocates memory and system time between the variety of tasks Gem is capable of carrying out at one and the same time. The main functions of the AES are to handle certain distinctive Gem functions such as the creation of windows, placing objects on the screen and keeping track of the mouse.

It is also supervising the ST's multitasking functions which permit desk accessories to be constantly running in the background of a main application, calling up and terminating the current application program on command, to managing the screen. To understand properly the two types of program need to be defined.

Applications programs: this is simply the name given, in a Gem system, to the kind of program which most people will normally be running on the ST: a word processor, a database, a spreadsheet, perhaps one of the languages like Logo or Basic, or even the Gem Desktop. In dealing with applications programs the purpose of the AES is to ensure that they have enough memory to function (at least 128K in most cases).

If desk accessories (see below) would run the current application, the AES will ensure that they are not loaded into memory.

Accessories: this is the name given to a special type of program like the calculator or the "snapshot" facility for printing out screen areas, which are designed to run in the "background" of the Gem system.

An accessory program is always running. This does not mean that it is constantly performing major tasks, simply that it is resident in the memory of the ST and has given notice to the AES that on a certain series of actions taking place, the current application is to be frozen and access given to the accessory.

Gem on the ST

The real beauty of the ST is that none of the technicalities of Gem need concern the average user. Owners of other micros who purchase a Gem system sometimes have to go to considerable lengths to customise it to their machine and even so, some of Gem's best features may be hamstrung by the limitations of the machine.

By comparison the ST has grown up around Gem, its hardware is designed to express Gem to perfection and, once Gem VDI and AES are securely locked into Rom the Gem system will be at its fastest and its best from the very beginning.

Power group

Program *Metacomco Macro Assembler* **Micro** Atari ST **Price** £49.95 **Supplier** Metacomco, 26 Portland Square, Bristol, BS2 8RZ

Metacomco is a highly-regarded software house producing language and utility programs. Their *Macro Assembler* is a sophisticated package capable of many complex functions.

It has a feature rarely implemented on assemblers for home computers – macro assembly – the definition of a group of instructions which can then be included within a program simply by using the macro name.

Many assemblers for home machines are designed with cassette operation in mind and try to keep loading and saving down to a minimum. The Metacomco *Macro Assembler* shows its professional breeding by requiring four programs to be run in order to produce a routine.

The Editor allows you to write the source file, no line numbers are needed and the program behaves rather like a (difficult to use) word processor. Having written the source code, you then run the Assembler. This requires a command line to tell it which options you require, what files are to be produced and what to call them. If all is well you must then feed the object file (assuming that you remembered to ask the assembler to produce one) into the *Convert* program so that the object file will interface with the *Linker* program. This finally writes a program which will run under Gem.

This assembler is powerful, and flexible but it is not easy to learn to use, and the documentation is little help. Less experienced users would benefit from some worked examples.

For the professional software writer or serious machine code enthusiast, this program is to be highly recommended. If you are a beginner, however, it could put you off machine code for life.

Jeff Naylor

The symmetry of the living room is ruined by an overturned statue, and the chalk outline of a corpse--gruesome reminders of why you are here. Golden leaves lie scattered around the broken statue. Nearby stands a card table, two chairs, and a breakfast bar. There is a lightswitch on the wall. Across the room stands a huge sofa atop a rare oriental rug, and a coffee table which face toward a brick fireplace. A wet bar, lined with bottles, stands along the same wall as the fireplace.

Out of court

Program *Perry Mason The Case Of The Mandarin Murder* **Micro** CBM64 + Disk Drive **Price** £19.95 **Supplier** Telarium (Import & Specialist Shops)

Her name is Laura Kapp, and she looks as if she's in trouble.

It doesn't take long for you to find out how: her husband wants to divorce her. Not your favourite kind of case at seven in the evening. But then, it isn't like Perry Mason to leave an attractive young woman in distress either – especially when her husband is Victor Kapp, the most famous restaurateur in Los Angeles.

You take the case.

And what a case it is. Because barely 12 hours later, Victor Kapp is dead – murdered. Laura is in jail, charged with his death. And facing trial. Your natural instinct tells you Laura is innocent, but proving her innocence is not going to be easy.

Help is available in the form of your two trusty sidekicks, Della Street and wily detective Paul Drake, who, when asked, will investigate various suspects and report back with their findings.

I found this game totally absorbing from the onset. First you need to fish around for clues in the dead man's apartment then, after visiting Laura, off to court for terrific interactive game play.

The outcome of the case depends solely on how you cross examine the various characters, breaking down a witness testimony needs to be well thought out beforehand.

Various actions can be performed while cross examining such as sneer, smile, whirl towards the jury, introduce new evidence, talk to the judge.

The game comes on two discs and is attractively packaged, also included is a Lawyers handbook which informs you of the correct way of cross examining. Good well defined graphics also add a certain amount of interest to the game. Overall I found the game to be well thought out, excellently programmed and well worth every penny.

Roger Garrett

Home base

Program *BBC Basic* **Micro** Any Amstrad CPC with CP/M **Price** £29.95 disc **Supplier** Timatic Systems Ltd, Fareham Market, Fareham, Hants

Although this is not a cheap program and will probably be beyond the scope of most individuals, *BBC Basic* could be a vitally important release for Amstrad and should not be ignored.

Anyone who has had much to do with computers in education will know that two micros dominate. Research Machines' RML range and Acorn's BBC. Of the second division of school micros by far the most active interest is now focusing on the Amstrad. There are some very good reasons for this. The 6128 for example, costs under half the price of an equivalent BBC setup, so that schools, and parents, can often afford one per child. You also get the benefit of CP/M capable of running mainstay business programs such as *Newword*, experience of which may be invaluable when job hunting. Finally, there are some very sophisticated Amstrad network systems starting to appear.

Amongst the problems Amstrad faces in penetrating this market is the resistance of the education departments and teachers that have already invested so much in the BBC.

Despite the structured elements such as Procedures, BBC Basic is one of the most obscure and unreadable versions of the language. Even so, many education programs now exist that use the Basic and teachers are reluctant to abandon them.

The Z80 CP/M BBC Basic is not new, and has been around on machines such as the Einstein for some time. What is more worthy of note is that the Amstrad CPC is so similar to the BBC in terms of screen modes, sound chip, etc, that a staggeringly complete implementation has been managed. Conversions of programs should in many cases be almost effortless. There isn't an enormous amount of memory left after loading, but most schools have the old BBC B which has hardly any either.

The program can be bought now, but lacks the *Plot* command, a full version of *Envelope*, mode 7 teletext and *Adval*. Work is still going on to implement these commands and improve the error trapping, but upgrades will be sent to all registered users. *Adval* can only be added as and when someone releases an analogue to digital converter for the Amstrad. The built-in assembler has been implemented, but adjustments will obviously have to be made.

A version is being produced for the PCW 8256, but will obviously lack sound and many graphic options.

Tony Kendle

Tally ho!

Program *Spitfire 40* **Micro** Any Amstrad CPC **Price** £8.95 **Supplier** Mirrorsoft, Purnell Book Centre, Paulton, Bristol BS18 5LQ

The wartime flight and flight simulator, *Spitfire 40* was first released on the Commodore and received enthusiastic reviews. Some of the graphics were spectacular, in particular the marvellously detailed and realistic looking instrument panel, but it was flawed by a slow screen update and subsequently jerky movement.

The conversion to the Amstrad has exceeded all expectations. The detailed graphics have been preserved, but the spread of the game has been enormously improved such that movement is smooth and realistic. The sound is also some of the nicest I've heard on the CPC. There is a genuine aircraft drone rather than a weedy buzz and the bullet fire is similarly well done. Unfortunately, there are still few landmarks on the ground to provide more of a flying challenge.

I am particularly fond of the instrument panel which retains all the detail of the Commodore original – and as it should – and gives you a marvellously realistic sense of being in the cockpit.

It may just be that I'm a veteran of dozens of flight simulators, or it may be something to do with the game, but the thing does seem quite easy to fly, if not to land. Other nice touches are that you have to take into account the movement of the enemy aircraft when firing, and it is possible to save your progress in the form of a Pilot's Log. Collect enough kills and you can graduate to Ace of the Camp.

For the complete novice there is lots of opportunity to practice different elements of flying from take-off and landing to the all important combat.

The only reason to be wary of this superb program is if you already have *Fighter Pilot*, if you remove all of the extra trappings from *Spitfire* it plays almost exactly the same.

Tony Kendle

Trumps

Program *Bridge Player 3* **Micro** Amstrad range **Price** £15.95 disc **Supplier** CP Software, 18 Despard Road, London N19 5NP

Bridge Player 3, now out for the Amstrad range, is an upgraded version of CP's *Bridge Player 2*, rather than the confusingly similarly named *Bridge Player II* (from the same company).

BP3 plays bridge on a standard micro format. you are always South and the computer is everyone else. You have the option of playing randomly dealt hands, a consistently superior North-South holding, or being consistently inferior. Surely only a masochist would choose the last option?

The bidding is fairly sound, the only drawback being that while conventions such as Stayman and Blackwood are understood by the program, it is always up to you to initiate them. In the play, it does not 'cheat' on the E-W cards, ie it does not play as though it can 'see' all 52 cards, which is a good thing. But it is rather erratic – several times I have seen E-W hold up a winning Ace until the trick where it can be trumped, and 'they' have discarded winners in the end-play. Somehow I feel they would not remain partners for very long in real life.

The program has also been a little confused at times and asked me to supply West's lead to the first trick, and the character set deteriorated at one point to allow West to beat any ace of trumps with the spade of clubs (sic)!

But there are several worse Bridge programs on the market and this one has the bonus of plenty of options to allow you to practise flexibly – replay of tricks, and a peep at tricks previously played, for example.

Christina Erskine

New leap

Program *Dragonskulle* **Micro** Commodore 64 **Price** £9.95 **Supplier** Ultimate, Unit 10 Parkway Industrial Centre, Heneage St, Birmingham

After *Imhotep* and *Outlaws*, I wondered what to expect from Ultimate's latest release.

Dragonskulle heralds the return of the rather travel-worn Sir Arthur Pendragon. Having survived all those other Ultimate quests, he must surely now be a man to be reckoned with.

The game sets Arthur on a desert island, immediately post *Blackwyche* chronologically. As the island isn't all that big, the only way of continuing the game is by entering a cave, and exploring underground. The scenery includes dragons (obviously), birds, stalactites and other cave dwelling obscurities.

Arthur's capabilities include balder-throwing and jumping, although he seems to have altered his bunny-hop technique since *Staff of Karnath*.

Dragonskulle is a welcome return to the *Entombed/Karnath* format, after the misplaced departures of *Imhotep* and *Outlaws*, but it lacks any startlingly innovative features.

Jim Beales

At work

Program *Toolkit* **Micro** Any Amstrad CPC **Price** £14.95 Tape £17.95 Disc £29.95 Rom **Supplier** Beebugsoft, PO Box 50, St Albans, Hert.

Because of the ease of adding RSX extension commands to Locomotive Basic Toolkit, programs now abound for the Amstrad machines. Each has certain strengths that make them stand out and I recently heard a normally placid Amstrad dealer enthusing wildly about this Beebugsoft release.

He was most impressed by a program compactor routine that kills Rem statements, shortens variables, removes excess spaces and joins lines together. Using this he got a Bridge program from the 464 to run on a 6128 when it normally wouldn't because of a lack of memory (sic! – the presence of the disc filing system shortens the first 64K by a couple of K).

Other original touches are *Rmove* and *Start* that move a Basic program anywhere in memory, and let you alter system pointers such that two programs can be held in memory at once and switched between at will. For the real sloths, *Kon* lets you use an abbreviated keyword system, eg, you can type M instead of *Mode*. *Partsave* lets you save a given block of a Basic program, *Key* lets you read and edit function key strings, *Keydef* returns the codes assigned to any of the keys. *List* will list a program from disc or tape without effecting the one in memory.

There is also a DMP1/Epson compatible screen dump command. Arnor's *Utopia* toolkit has been revamped with some major improvements including a screen dump that must use a similar routine since neither work with my Epson compatible printer.

But then Micropower's *Toolbox* screen dumps do; it seems that there are Epsons and Epsons and it is worth checking which sort you have. With so many toolkits it may be the best way of choosing.

Tony Kendle

BRIDGE SCORE

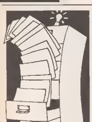
by Tim Lebon

This program for the Spectrum is designed for people who know how to play Bridge, but aren't so hot on adding up. It automatically keeps track of Bridge scores and only requires details of the initial contract and the actual number of tricks won, in order to correctly calculate the scores.

The program is fully error trapped and will not allow you to input impossible bids. There is plenty of opportunity to correct entered information.

```
5 POKE 23609,100
10 REM opening routine
11 DIM t(2): REM total points
12 DIM v(2): REM 1 if vulnerab
le
13 DIM p(2): REM p(1)=n/s belo
w line
15 DIM n$(4,10): REM names
16 DIM x(2,2)
17 DIM y(2,2): REM x/yprinting
 co-ordinates
20 PRINT AT 3,1;"BRIDGE SCORER
 by Tim Lebon"
22 PRINT AT 8,3;"ENTER names o
f players...."
25 PRINT AT 10,5;"(maximum 10
letters)"
30 PRINT AT 14,4;"NORTH ?..."
40 INPUT n$(1)
50 PRINT AT 14,4;"SOUTH ?..."
60 INPUT n$(2)
70 PRINT AT 14,4;"EAST ?...."
80 INPUT n$(3)
90 PRINT AT 14,4;"WEST ?  .."
95 INPUT n$(4)
100 BORDER 6: INK 2: CLS
101 LET y(1,1)=0: LET y(1,2)=0
102 LET y(2,2)=16: LET y(2,1)=1
6
103 LET x(1,1)=5: LET x(2,1)=5
104 LET x(1,2)=13: LET x(2,2)=1
3
108 PLOT 0,143: DRAW 255,0
110 PLOT 0,73: DRAW 255,0
120 PLOT 127,174: DRAW 0,-154
125 PLOT 0,20: DRAW 255,0
130 INK 0: PRINT AT 0,2;"NORTH/
SOUTH"
140 PRINT AT 0,18;"EAST/WEST"
143 INK 1
150 PRINT AT 1,3;n$(1);
160 PRINT AT 2,1;"& ";n$(2);
170 PRINT AT 1,19;n$(3)
180 PRINT AT 2,17;"& ";n$(4)
200 INK 3: INVERSE 1
201 PRINT AT 3,1;t(1)
202 PRINT AT 3,26;t(2)
203 INK 3: IF v(1)=1 THEN PRIN
T AT 0,16;"v"
204 IF v(2)=1 THEN PRINT AT 0,
28;"v"
205 INVERSE 0: INK 1
206 GO SUB 1800
207 PRINT AT 20,0;"  WHAT CONTR
ACT HAS BEEN BID?"
210 INPUT ;"eg ENTER 3n for 3 N
OTRUMP ";b$
212 IF LEN b$<2 THEN GO TO 200
: REM error-trap
215 IF CODE b$(1)<49 OR CODE b$
(1)>55 THEN GO TO 200
216 IF b$(2)<>"n" AND b$(2)<>"s
" AND b$(2)<>"h" AND b$(2)<>"d"
AND b$(2)<>"c" THEN GO TO 200
217 LET a=VAL b$(1)+6: REM a=tr
icks attempted
220 PRINT AT 20,0;"ENTER d i
f contract doubled,         r i
f redoubled"
230 INPUT "       else hit ENTER
.  ";d$
240 GO SUB 1800
250 INK 0: PRINT AT 20,0;"ENTER
": PRINT AT 20,7; INK 2;"n": IN
K 0: PRINT AT 20,8;" if north/so
uth will
260 PRINT AT 21,0;"attempt ";b$
;"?": PRINT AT 21,11; INK 2;" e
": PRINT AT 21,16;"if east/west.
"
270 INPUT e$
275 IF e$<>"e" AND e$<>"n" THEN
 GO TO 250
280 IF e$="n" THEN LET p=1: GO
TO 300
290 LET p=2
300 GO SUB 1000
310 IF e$="n" THEN PRINT AT 20
,0;" CONTRACT: ";b$;" by n/s"
312 IF e$="e" THEN PRINT AT 20
,0;" CONTRACT: ";b$;" by e/w"
315 LET d=1: REM (re)doubling
320 IF d$="d" THEN LET d=2
325 IF d$="r" THEN LET d=4
330 INK 2: IF d=2 THEN PRINT A
T 20,23; "DOUBLED"
340 IF d=4 THEN PRINT AT 20,23
;"REDOUBLED"
360 INK 1: PRINT AT 21,0;"ENTER
e if error else hit ENTER": INP
UT f$
380 IF f$="e" THEN GO TO 200
400 GO SUB 1800
405 PRINT AT 20,0;"ENTER h if a
nyone is claiming  honours poin
ts:else hit ENTER"
406 INPUT f$
407 IF f$="h" THEN GO SUB 900
408 GO SUB 1000
410 PRINT AT 20,0;"HOW MANY TRI
CKS DID DECLARER    MAKE?"
420 INPUT m$
430 IF LEN m$=0 THEN GO TO 420
440 FOR k=1 TO LEN m$
450 IF CODE m$(k)<48 OR CODE m$
(k)>57 THEN GO TO 420
460 NEXT k
470 LET m=VAL m$: REM m=tricks
made
480 IF m>13 THEN GO TO 410
500 IF m=a THEN LET r$="CONTRA
CT MADE EXACTLY"
510 IF m<a THEN LET r$=STR$ (a
-m)+" undertrick"
530 IF m>a THEN LET r$="CONTRA
CT MADE WITH "+STR$ (m-a)+" over
trick"
540 IF ABS (m-a)>1 THEN LET r$
=r$+"s"
560 GO SUB 1000
570 INK 2: PRINT AT 20,0;r$
600 INK 0: PRINT AT 21,0;"ENTER
e if error else hit ENTER": INP
UT f$
610 IF f$="e" THEN GO TO 400
620 GO SUB 1100: REM works out
points
680 GO SUB 1400: REM prints sco
re
750 IF p(p)>=100 AND v(p)=1 THE
N PRINT AT x(p,1),y(p,1);700-(2
00*v(3-p)): LET t(p)=t(p)+700-(2
00*v(3-p)): GO TO 1500
760 IF p(p) =100 AND v(p)=0 THE
N LET v(p)=1: GO SUB 1700
800 GO TO 200
900 REM honours
910 GO SUB 1000
920 PRINT AT 20,0;"ENTER number
 of points being    claimed or 0
 if no more honours"
930 INPUT e$
940 IF e$="0" THEN RETURN
950 IF e$<>"100" AND e$<>"150
THEN GO TO 920
960 GO SUB 1000
965 PRINT AT 20,0;"ENTER n if n
/s claiming honours or e if east
/west"
```

```
970 INPUT d$
975 IF d$<>"n" AND d$<>"e" THEN
 GO TO 970
980 GO SUB 1000
985 PRINT AT 20,0;a$;" honours
points "(";"to ";d$
987 DIM e(2,2)
990 IF d$="n" THEN LET e(1,1)=
VAL a$
995 IF d$="e" THEN LET e(2,1)=
VAL a$
998 GO SUB 1400
999 RETURN
1000 REM clears bottom 2 lines
1005 INVERSE 0
1010 FOR k=20 TO 21
1020 PRINT AT k,0;"
                          ": REM 32 spa
ces
1030 NEXT k
1040 RETURN
1100 DIM e(2,2): REM score this
hand
1110 IF a>=m THEN GO TO 1300: REM p
enalties
1150 IF (b$(2)="c" OR b$(2)="d")
 THEN LET e(p,2)=((a-6)*20): LE
T e(p,1)=(a-m)*20
1160 IF (b$(2)="s" OR b$(2)="h")
 THEN LET e(p,2)=((a-6)*30): LE
T e(p,1)=(a-m)*30
1170 IF b$(2)="n" THEN LET e(p,
2)=40+((a-7)*30): LET e(p,1)=(a-
m)*30
1180 LET e(p,2)=e(p,2)*d
1185 IF d>1 THEN LET e(p,1)=(a-
m)*50*d*(v(p)+1)
1190 LET p(p)=p(p)+e(p,2)
1195 IF a=12 THEN LET e(p,1)=e(
p,1)+(500+1250*v(p))
1196 IF a=13 THEN LET e(p,1)=e(
p,1)+(1000+1500*v(p))
1200 IF d>1 AND a>=m THEN LET e
(p,1)=e(p,1)+50: REM 50 for ins
ult
1220 RETURN
1300 IF d<>1 THEN GO TO 1330: R
EM doubled
1310 LET e(3-p,1)=50*(a-m)*(v(p)
+1)
1320 RETURN
1330 LET e((3-p),1)=(50*(d-1)+ (p
))*((100+(v(p)*50))*d))*(a-m-1)
)
1350 RETURN
1400 INK 0
1405 FOR k=1 TO 2
1420 IF e(k,1)>0 THEN PRINT AT
18-x(k,1),y(k,1);e(k,1)
1425 IF e(k,2)>0 THEN PRINT AT
x(k,2),y(k,2);e(k,2)
1430 IF e(k,1)>0 THEN PRINT AT
18-x(k,1),y(k,1);e(k,1)
1433 IF e(k,2)>0 THEN PRINT AT
x(k,2),y(k,2);e(k,2)
1435 IF e(k,1)>0 THEN LET x(k,1
)=x(k,1)+1
1440 IF e(k,2)>0 THEN LET y(k,2
)=y(k,2)+LEN STR$ e(k,2)+1
1445 IF x(k,1)>11 THEN LET y(k,
1)=y(k,1)+5: LET x(k,1)=0
1470 NEXT k
1475 LET t(1)=t(1)+e(1,1)+e(1,2)
1480 LET t(2)=t(2)+e(2,1)+e(2,2)
1490 RETURN
1500 REM ends rubber
1501 GO SUB 1700: INK 3: INVERSE
 1: PRINT AT 3,11;t(1)
1502 PRINT AT 3,26;t(2)
1505 INVERSE 0
1506 GO SUB 1000
1508 INK 4: FLASH 1: PRINT AT 3,
(p-1)*16;"wins rubber"
1509 FLASH 0
1510 INPUT "ENTER p for printout
";a$
1520 IF a$="p" THEN COPY
1530 DIM v(2): DIM p(2): CLS : G
O TO 100
1702 INK 2
1708 PLOT 0,160-((168*x(p,2))/21
)
1709 DRAW 255,0
1710 LET x(p,2)=x(p,2)+1
1720 LET x(3-p,2)=x(p,2)
1721 LET y(1,2)=0
1722 LET y(2,2)=16
1725 LET p(2)=0: LET p(1)=0
1730 RETURN
```



PRINTING MODES

by John Durst

Following on from last week, this week brings another short machine code utility to enhance your hard copy on the 464 Run the Basic program, and save the code generated using *Save "Printer+", B,(your address), 100* The routine is activated by a direct call to the start address, and deactivated using start address plus two

In order to cue your text for double-width, or underlining, you have to choose a couple of characters, which the routine can recognise and send the appropriate codes to the printer, I have picked "—" (shifted zero), to signal underline and "↑" (the exponent arrow under the £ sign), to signal double-width Of course, using these characters in this way means that neither of them can be printed, but they are not symbols which often turn up in the ordinary course of typing If you specially want them in your text, you could change them for something else, their positions are marked in the programs

If you want to load this routine piggy-back with Easi-Amsword, you must beware that the word-processer uses some blocks of upper memory for its own purposes. Here is a rule of thumb Load sequence, which avoids the pitfalls.

(1) Clear the computer with Ctrl/Shift/Esc
(2) Symbol After 245
(3) Memory Himem-100
(4) Load "printer+",&AB44
(5) Call &AB44
(6) Load "Easi-Amsword" in the usual way

This program uses Escape sequences which toggle on and off. That is, they switch on, using *"SEC,(code),1"* and switch off with *"ESC,(code),0"*. The Epson code for "underline" is 27,45,1· to switch it off, use 27,45,0 There is a similar one for "double-width" 27,57,1 for on, 27,57,0 for off. Most dot-matrix printers have options like this and you should have no trouble making your own modifications

For the benefit of people interested in machine language, who have a disassembler, you will discover a routine which finds its own address. It's based on ideas suggested by Toni Baker She was working with a Spectrum, but the Amstrad uses a similar system of interrupts for keyboard scanning etc, and it works just as well

Here's how it goes First, give a *Halt* instruction, this makes the program wait until the next interrupt. When this occurs, it goes off to do its key-scanning bit, which it treats as a sub-routine This means that it puts the address of the next byte (DEC SP) on the stack. On return from the sub-routine, it *POPs* the stack address into the program counter and goes ahead.

But it's a mistake to think that *POPping* the address gets rid of it. All that has happened is that the stack pointer has been incremented twice The number is still there in Ram. So all you have to do is send back the stack pointer with two "DEC SP"s – and then *POP* the address into HL (which automatically restores the correct stack address)

Copy this address into the IX register and after that some simple arithmetic can calculate the relative addresses, needed for the program, and put in place using offsets in the IX Register

```
"PRINTER+" BASIC PROGRAM

10 REM *** Check code data ***
15 DIM chk(5)
20 RESTORE 1000:FOR j=0 TO 3
30 FOR i=1 TO 20:READ n$:chk(j)=chk(j)+V
AL("&"+n$):NEXT
40 NEXT
50 FOR i=1 TO 17:READ n$:chk(j)=chk(j)+V
AL("&"+n$):NEXT
60 FOR j=0 TO 4:READ n:IF n<>chk(j) THEN
 80
70 NEXT:PRINT"CODING CHECKS OK":GOTO 100
80 PRINT"ERROR IN LINE";1000+j
90 STOP
100 REM *** Place code in memory ***
110 PRINT"Space for 97 Bytes needed: Hav
e you set HIMEM?":INPUT"Start address:";
add
130 REM *** Enter main code ***
140 FOR j=0 TO 96:READ n$:POKE add+j,VAL
("&"+n$):NEXT
150 PRINT"ROUTINE LOADED":PRINT"CALL",ad
d;"to set Routine:":PRINT,add+2;"to canc
el"
160 END
900 REM *** Routine data ***
1000 DATA 12,B,19,2,0,0,21,F8,7,22,F2,BD
,C7,76,3B,3B,E1,E5,DD,E1
1001 DATA A7,1,A,0,ED,42,DD,75,38,DD,74,
39,23,DD, 75,4B,DD,74,4C,E
1002 DATA 29,9,22,F2,BD,C9,E5,FE,5F,2B,8
,FE,5E,29,17,E1,C3,F8,7,3E
1003 DATA 1B,CD,F9,7,3E,2D,CD,F8,7,21,4,
90,7E,EE,1,77,19,E9,3E,1B
1004 DATA CD,F8,7,3E,57,CD,F8,7,21,5,90,
7E,EE,1,77,19,D6
1100 REM *** Checksum data ***
1110 DATA 2151,2144,2490,2065,1973
```

Apologies to John Durst and Glenn Counsell to whom this program was wrongly credited last week.

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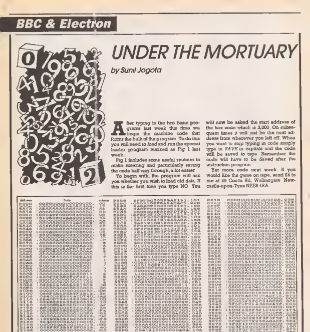


UNDER THE MORTUARY

by Sunil Jogota

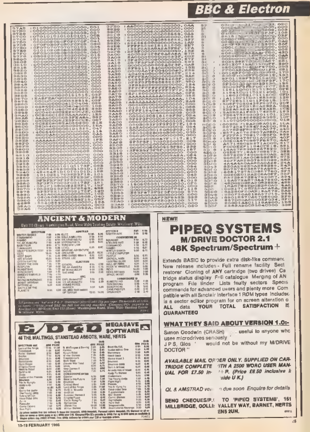
After typing in the two basic programs last week this time we begin the machine code that forms the bulk of the program. To do this you will need to *load* and *run* the special loader program marked as Fig 1 last week.

Fig 1 includes some useful routines to make entering and particularly saving the code half way through, a lot easier.

To begin with, the program will ask you whether you wish to load old data. If this is the first time you type NO. You will now be asked the start address of the hex code which is 3,000. On subsequent times it will just be the next address from wherever you left off. When you want to stop typing in code simply type in *SAVE* in capitals and the code will be saved to tape. Remember the code will have to be *Saved* after the instruction program.

Yet more code next week. If you would like the game on tape, send £4 to me at 59 Coutts Rd, Walkergate, Newcastle-upon-Tyne NE6 4RA.

Address	Code	Checksum
[illegible]	[illegible]	[illegible]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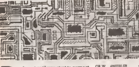


MEMORY TEST

by E Peach

Don't wait until you start to suspect that your trusty QL's memory is going rusty, it may be too late to try and write the memory testing program you need. You will also find that writing this sort of program with a possibly flaky memory is a very fraught exercise indeed! The simple remedy is to type in this memory tester right now.

So what's so clever about a QL memory tester? in its simplest form a byte is written to a memory location then read back to check if the same value was stored and retrieved from the memory cell. A good routine will not just write one byte, but will check every bit combination. A really super one will also check adjacent combinations and all the read/write instructions, but this would take a long time to run and be tedious to watch.

It may sound easy – some sort of initialisation routine, and a loop to change the test pattern, then a couple of instructions to read it into Ram, read it back and test it. Add a few status messages and that's that – right? Well nearly so, but I can assure you your QL will probably give you some nasty shocks when you run your program.

One critical factor is where to store the program, making sure that isn't in a bad memory location and not worry that Qdos might move it. There is one such place meeting these criteria and that is, of course, the bit-mapped screen.

There are still a couple of factors to take care of, one major one is to make sure we leave every byte the way we found it, but the most important is to turn off Qdos. If you don't it will normally wreck any disc or cartridge you have just used in the most thorough way. When typed in properly this program is quite safe – but please save the program and remove all discettes or cartridges.

Why is the QL so vicious when Qdos is abused? Well, one reason is that when you write bytes into the area from $28000 to $28480+ you will be stamping all over precious things like stack pointers, interrupt registers, channel data and microdrive controls. At the least the QL will lock or reset, but the real danger comes if Qdos should become active as you change the I/O controls.

So the most important thing is to turn off Qdos before poking data into Ram. The code to do this is very simple:

```
;RAM address to test in memory pointed at by A2
TRAP    #0              ;go to Supervisor mode
OR.W    #$0700,SR       ;disable all interrupts
LEA.L   TEMPSTORE,A5    ;set up a temporary store
MOVE.B  (A2),(A5)       ;save RAM pointed at by A2
LEA.L   TESTPAT,A4      ;get address of test pattern
MOVE.B  (A4),D5         ;get value of test pattern
MOVE.B  D5,(A2)         ;poke test pattern into RAM
MOVE.B  (A5),(A2)       ;restore old value of RAM
ANDI.W  #$D0FF,SR       ;user mode with interrupts
CMP.B   D6,D5           ;check if test failed
BNE.S   ERROR           ;print a status message
```

In order to help those of you without assemblers, the Basic program which follows will Poke in all the necessary code. Before you run it do remember to save it just in case you have managed to make two compensating errors and defeat the check sum. The code will ask you for the highest address you want to test, if you just press return it will default to the value stored at decimal 163872. If you want to see what bad memory does, Print (*Peek L*(163872))+2 and give this value as a reply.

```
100 MODE 4
110 pnumber = 131072 : REMark Base Address of Screen Memory
120 WINDOW #1,512,256,0,0
130 PAPER #1,0:INK#1,7:CSIZE#1,1,1
140 CLS
150 RESTORE
160 FOR count = 0 TO 51
170     total = 0
180     FOR num = 1 TO 11
190         READ pkdata :POKE pnumber,pkdata
200         pnumber=pnumber+1
210         total = total + pkdata
220     END FOR num
230     READ chksum
240     IF chksum <> total THEN
250         AT #1 5,10
260         PRINT #1,"ERROR at line number ";(1000+(10*count)) :STOP
270     END IF
280 END FOR count
290 AT #1,5,0
300 PRINT #1,"Please enter the last address you wish to test "
310 PRINT #1, TO 9,
320 INPUT #1;"(hit enter) if you don't know ";address$
330 IF address$<>"" THEN
340     last=address$
350     POKE_L 131076,last
360 END IF
370 CALL 131072
1000 DATA 98,0,0,182,0,0,0,0,0,0,0,230
1010 DATA 0,86,86,93,94,32,68,89,84,89,32,892
1020 DATA 86,85,80,32,32,32,32,32,32,13,32,455
1030 DATA 33,32,32,71,70,75,80,0,39,83,67,581
1040 DATA 82,95,69,40,54,120,58,32,97,50,58,750
1050 DATA 40,120,69,20,0,0,0,0,0,0,10,331
1060 DATA 83,87,82,95,65,40,54,120,58,52,97,803
1070 DATA 69,40,58,120,65,44,48,0,0,0,0,810
1080 DATA 0,17,83,67,82,65,51,67,54,120,58,670
1090 DATA 46,48,97,52,56,120,58,48,52,0,0,861
1100 DATA 0,0,0,0,0,0,0,0,0,0,0,0
1110 DATA 0,0,0,0,0,0,0,0,0,0,0,0
1120 DATA 0,0,0,0,0,0,0,0,0,0,0,0
1130 DATA 0,71,249,255,114,74,147,103,2,0,40,124,1385
1140 DATA 0,2,120,32,76,109,114,255,120,2,65,982
1150 DATA 250,255,276,112,1,70,66,67,250,285,100,1782
1160 DATA 34,136,114,7,97,0,1,40,118,2,134,683
1170 DATA 255,112,1,65,290,255,120,70,66,67,250,1527
1180 DATA 255,102,116,255,118,3,112,3,36,238,116,1283
1190 DATA 2,97,0,1,10,119,3,65,250,255,70,878
1200 DATA 114,255,112,2,70,66,67,250,255,80,34,1320
1210 DATA 238,114,4,97,0,0,243,71,250,255,26,1303
1220 DATA 54,103,0,0,71,250,299,234,33,63,50,1089
1230 DATA 60,0,88,52,60,0,64,112,33,70,67,888
1240 DATA 87,250,255,12,112,7,118,10,110,255,70,1288
1250 DATA 87,58,60,0,124,92,60,0,24,113,23,573
1260 DATA 70,67,87,250,254,236,113,7,116,10,118,1315
1270 DATA 255,70,67,120,1,71,250,250,216,40,16,1397
1280 DATA 73,250,299,90,97,0,0,216,113,7,116,1184
1290 DATA 2,118,250,87,250,255,64,70,87,30,236,1290
1300 DATA 0,2,2,0,122,7,87,0,0,176,112,510
1310 DATA 7,116,0,110,255,71,250,254,224,22,83,1410
1320 DATA 67,250,255,14,76,67,70,66,0,174,7,3000
1330 DATA 0,79,150,254,154,26,146,73,250,256,109,3032
1340 DATA 20,30,34,133,30,16,21,89,255,255,2,871
1350 DATA 120,160,255,100,6,102,10,40,10,1,134,1005
1360 DATA 0,0,15,255,74,134,102,210,96,22,67,975
1370 DATA 250,254,216,71,290,254,196,22,87,122,7,1733
1380 DATA 87,98,113,7,116,0,116,255,79,67,116,1060
1390 DATA 10,112,5,76,67,71,250,254,10,101,221,1219
1400 DATA 100,140,71,250,256,76,82,84,12,86,1,1173
1410 DATA 0,112,0,255,80,71,250,254,116,32,83,1209
1420 DATA 112,1,76,66,71,250,254,128,12,83,70,1156
1430 DATA 46,112,0,78,117,110,255,112,39,70,87,1042
1440 DATA 112,46,70,67,110,0,113,41,70,67,116,825
1450 DATA 2,112,12,70,67,113,32,70,67,118,2,875
1460 DATA 150,0,112,46,70,67,70,112,73,250,258,1150
1470 DATA 200,24,252,0,32,11,205,255,250,126,7,1340
1480 DATA 44,10,26,4,2,5,0,15,12,5,0,125
1490 DATA 10,100,6,6,3,0,46,94,6,6,5,286
1500 DATA 0,55,25,5,232,143,91,207,255,220,71,1300
1510 DATA 217,255,255,255,255,255,255,206,285,250,235,2887
```

Special mission

Dragontorc has taken a rest this week as we have a lot of other things to deal with

There's no doubt that *Elite* is the game of the moment. It's certainly making its presence felt in my postbag more and more, although a large amount of the mail is to do with the Commodore *Elite* editor that was printed a few weeks ago and seems not to work. I must confess that I'm having a little trouble sorting this out, because, to take a leaf from Margaret Thatcher's book, I was on holiday at the time the listing was made All I know is that we had a working copy of the program but it seems that the Thargons intercepted it somewhere between here and the printers

I will have the corrections sorted out in a week or so, so no more letters about it *please*.

Anyway, the gremlins have also struck in the printing of the Spectrum *Elite* editor in the 12th Jan issue. The first number in the *Data* statement should be 62 and not 65

You also have to press key *One* to *Save* after calling the *Usr 23310* Thanks to Mick West of Manchester for pointing this out and also letting us in on an extra poke that is available

Poke 32960,255

This will give you a cloaking device (it makes you invisible) and an ECM system jammer You can turn them on and off by pressing the *Y* key They use a lot of energy. What Mick has not realised is that both these pieces of equipment are presented to you as 'rewards' or spoils of completing some of the special missions on the game

There are, in fact, three of these and anyone wanting full details should refer to the (plug, plug) *Arcade Champions Guide*

Let's stick with the same subject for a minute or two. Dave Newton of Bolton suggests that there is in fact a fourth special mission in the game

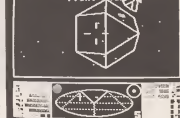
"My friend Phil Sumner discovered that if you pressed *Caps Shift* to freeze the game, then the *F* key followed by *Space* to restart and then hyperspace to any location, the mission will become obvious as your ship becomes surrounded immediately by Thargons – and they are close

"The short range scan will show that you are trapped in an area between planets Your escape pod will not work and the energy bomb will only destroy the droids that are released, not the motherships. Average survival time in these conditions is about 30 to 40 seconds but with practice a technique can be developed

"Worse still, if you quickly reset hyperspace and jump again you will find another set of Thargon waiting for you. You can only escape by freezing the game again and pressing the *F* key.

"I think this mission can be accessed at any time, but I've only tried it at *Elite* status Firebird has told us that it is not a bug but a genuine mission that was programmed, but then dropped when it was found to be almost impossible. You get no reward for killing the Thargons, just good practice

"Incidentally, I spent over 400 hours on the game with about half of this devoted to improving my rating for the competition I reached *Elite*, but went on to score another 16 Right On Commanders and ended with a credit total of 1,284,925, only to find that the Firebird competition was called off I was disappointed to say the least."



Elite on the Spectrum

Abandoned mission

Well, Dave, thanks for the letter The only thing that springs to mind is that I'm sure there is a similar feature to that which you described on the BBC version of the game

The area between planets is referred to as witch space and it's crawling with Thargons so I don't see how Firebird can dismiss this as an 'abandoned special mission' Perhaps some BBC player can write and confirm this

Now for a change of game to have a look at Ultimate's *Gunfright*. If you saw the results of our Reader's Poll a few weeks back you may have been as amazed as I was in the way that certain games appeared in both the 'Best of' and 'Worst of' categories As a reviewer it certainly is a sobering thought to realise how violently people's tastes can differ and that a game that you may recommend as brilliant, others will find terrible

Just to illustrate the point here is a letter from E Bennet of Southend about *Gunfright*, which generally received quite good reviews.

I don't normally like publishing Mr Angry letters, but this one was so funny I couldn't resist it.

Differing tastes

"The town in Ultimate's latest white elephant, *Gunfright*, is small enough to spit across, and after paying a tenner I am very tempted to try. I hope US Gold knows what it is doing or we could see a redesigned *Jetpac* very soon

"My tip for the game is to have plenty of strong black coffee and a plate of hot beans before starting, not to set the scene but to keep you awake The little men jumping up and down have also bought the game thinking that they had got something exciting, new and original and not this redesigned rubbish that Ultimate didn't even write the original for (*Nightshade* was written by Dare). Now hand me that spittoon."

Tony Bridge's Adventure Corner

A strong spell

Lord of The Rings may be foremost in the minds of many adventurers at the moment, but *The Hobbit* still wields a strong spell, and (surely the sign of a classic) many players are still working through the game and having problems

'I have got as far as the dragon's lair and have Thorin, the golden key and the ring. Now I am at the entrance to the mountain, but can't get the side door open please help ' This is from Corporal Colin Keane out there in Berlin. To open this door, Colin, you'll need the small curious key from the infamous goblin's dungeon (once visited, never forgotten!) – you must break the trapdoor somehow, by either *Smashing* or *Striking* it At the side door, just *Unlock* it and go through.

Peter Twamley has killed Smaug but now has trouble getting home from the running river Here, you should allow yourself to be captured by the wood elf who will throw you into the elvenking's dungeon, from there, it's back into the barrel and a trip through the trapdoor, courtesy the butler, or wait until he opens the door

Peter's second question concerns the adventure from Hewson that was a favourite of many an experienced player, *Fantasia Diamond* 'I can't get across the river, and I can't open the black window ' The river can be crossed by boat, but unfortunately, that is on the *other* side at the start of the adventure, so the river can only be crossed toward the end of the game To open the window, rub the glass

Now to *The Helm*, a rather nice traditional adventure from Firebird and written by Simon Jay 'Have you the cunning, power and knowledge to enter the dark one's lair and wrest the helm of immortality from his evil grasp?' So runs the blurb on the cassette inlay, and Tony Scrivener among many others has been foolhardy enough, I mean brave enough, to take up the challenge. But now he cannot get past the rubble and debris in the mountain pass Sorry, Tony, but the "heavy seismic activity" in the pass was the result of the programmer not creating a location to the north – instead, he created a rather atmospheric description (or excuse) explaining why the player can't progress in that direction. However, there are plenty of other things to do in the adventure, the story line of which is good and atmospheric. The puzzles are sometimes a little devious and it's quite easy to get killed off unless you keep your wits close at hand

One of *The Helm*'s problems reminds me very strongly of a similar situation in Level 9's *Dungeon Quest* in this game, the player must avoid being hypnotised by a psyak, a kind of visual rather than aural siren, by temporarily blinding himself. In *The Helm* game, the player must deafen himself to escape the clutches of the siren. Mere coincidence, I'm sure, and the presentation, the excellent story-line and good use of *The Quill* in *The Helm* makes for a good game and the price is right, at £2 50, too

From a fairly recent game that adventurers might like to invest in, to one that is getting a little ancient now, but is nevertheless a classic *Heroes of Karn* has been mentioned many times in The Corner, and elsewhere of course, and is an excellent example of the adventure-writer's craft in this case, Ian Grey, with a great music score from composer Chris Cox. Your task in the adventure is to find and set free the four eponymous heroes

Linda Parish wants to know how to kill the serpent, take the wand, open the clam and also how to kill the pirate To deal with the serpent, you must remember a bit of ancient adventure lore in the Crowther and Woods' original, the snake is frightened away by the bird, and so will this one Ask Beren to take the songbird, and upon encountering the serpent, type *set songbird on serpent*. Presto! no serpent Only Istar can take the wand and he is close at hand. After dealing with the serpent, go to the crystal room and take the bottle To free Istar, you must play the flute, but beware! Never play the flute in the presence of the bottle – so take the bottle and leave it in another room, return to the crystal room and meet Istar

Incidentally, you shouldn't forget that he has the wand, for you'll certainly need it later in the game To open the giant clam, you should have with you the crowbar from the tool room Just ask Beren to open the clam using the crowbar The pirate, as with all the other problems, can only be tackled by a friend, Khadim in this case.

Judging from your questions, I would say that you are a long way from freeing him, and in fact, it is only towards the end of your quest that the pirate will meet his end – it would take a long time for me to tell you any more and you may not want me to However, if there are any heroes reading this who want to help Linda further, I'm sure that she would like to hear from you. Her address is. 9 Georgeville Gardens, Barkingside, Essex IE6 1JJ

There are exits to the north, south and west.

The Helm from Firebird

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COMPUTER SWAP

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COMPUTER SWAP

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PLEASE NOTE All software offered through computer swap must be in original condition and for private sale only. No advertisements for lists of software will be accepted.

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Charts

Amstrad

1	(1)	Sky Fox	(Ariolasoft)	£9.95
2	(6)	Formula One Simulator	(Mastertronic)	£1.99
3	(–)	Theatre Europe	(PSS)	£9.95
4	(8)	They Sold A Million	(Hit Squad)	£9.95
5	(4)	Yie Ar Kung Fu	(Imagine)	£7.95
6	(5)	Finders Keepers	(Mastertronic)	£1.99
7	(3)	Caves Of Doom	(Mastertronic)	£1.99
8	(–)	Computer Hits (10)	(Beau Jolly)	£9.95
9	(–)	Hypersports	(Imagine)	£8.95
10	(2)	Spellbound	(Mastertronic)	£2.99

Atari

1	(3)	Action Biker	(Mastertronic)	£1.95
2	(2)	Chimera	(Firebird)	£3.95
3	(4)	Smash Hits 4	(English)	£9.95
4	(9)	Eidolon	(Activision)	£14.95
5	(3)	Mercenary	(Novagen)	£9.95
6	(6)	Spy Hunter	(US Gold)	£9.95
7	(10)	Electro Glide	(English)	£9.95
8	(5)	Goonies	(US Gold)	£9.95
9	(–)	Fighter Pilot	(Digital Integration)	£9.95
10	(–)	Zorro	(US Gold)	£9.95

BBC

1	(1)	Yie Ar Kung Fu	(Imagine)	£9.95
2	(3)	Citadel	(Superior)	£9.95
3	(2)	Way of the Exploding Fist	(Melbourne House)	£9.95
4	(8)	Repton 2	(Superior Software)	£9.95
5	(5)	Strike Force Harrier	(Mirrorsoft)	£9.95
6	(–)	Nightshade	(Ultimate)	£9.95
7	(10)	Match Day	(Ocean)	£9.95
8	(–)	Bullseye	(Macsen)	£7.95
9	(7)	Computer Hits (10)	(Beau Jolly)	£9.95
10	(4)	Speech	(Superior)	£9.95

Commodore 64

1	(–)	Kung Fu Master	(US Gold)	£9.95
2	(1)	Rock 'N' Wrestle	(Melbourne House)	£9.95
3	(8)	Commando	(Elite)	£9.95
4	(3)	Koronis Rift	(Activision)	£9.95
5	(–)	Winter Games	(Epyx/US Gold)	£9.95
6	(2)	Bounder	(Gremlin Graphics)	£9.95
7	(–)	Mercenary	(Novagen)	£9.95
8	(–)	Now Games 2	(Virgin)	£8.95
9	(5)	Back To The Future	(Electric Dreams)	£9.95
10	(9)	Rambo	(Ocean)	£8.95

Spectrum

1	(1)	Winter Games	(Epyx/US Gold)	£7.95
2	(6)	Commando	(Elite)	£7.95
3	(–)	Spellbound	(Mastertronic)	£2.95
4	(4)	Rambo	(Ocean)	£7.95
5	(2)	Yie Ar Kung Fu	(Imagine)	£7.95
6	(–)	West Bank	(Gremlin Graphics)	£7.95
7	(–)	Barry McGuigan World Champions	(Activision)	£7.95
8	(7)	Caves of Doom	(Mastertronic)	£1.99
9	(–)	BMX Racers	(Mastertronic)	£1.99
10	(9)	Saboteur	(Durell)	£8.95

All figures compiled by Gallup/Microscope

Top Twenty

1	(–)	Kung Fu Master *(C64)*	US Gold
2	(1)	Yie Ar Kung Fu *(Spectrum/C64/Amstrad/BBC/MSX)*	Imagine
3	(4)	Winter Games *(Spectrum/C64/Amstrad)*	Epyx/US Gold
4	(1)	Rock 'N' Wrestle *(C64)*	Melbourne House
5	(3)	Commando *(Spectrum/C64)*	Elite
6	(10)	BMX Racers *(Spectrum/C64/C16)*	Mastertronic
7	(15)	Formula One Simulator *(Various)*	Mastertronic
8	(4)	Rambo *(Spectrum/C64)*	Ocean
9	(5)	Action Biker *(Spectrum/C64/Atari/C16)*	Mastertronic
10	(9)	They Sold A Million *(Spectrum/C64/Amstrad)*	Hit Squad
11	(7)	Computer Hits 10 *(Spectrum/C64/Amstrad/BBC)*	Beau Jolly
12	(14)	Finders Keepers *(Spectrum/C64/Amstrad/MSX)*	Mastertronic
13	(17)	Hypersports *(Spectrum/C64/Amstrad/BBC/MSX)*	Imagine
14	(–)	Spellbound *(Amstrad)*	Mastertronic
15	(–)	Now Games 2 *(Spectrum/C64)*	Virgin
16	(19)	Elite *(Spectrum/C64/BBC)*	Acornsoft/Firebird
17	(15)	Rockman *(Spectrum/C64/C16/Vic 20)*	Mastertronic
18	(–)	Barry McGuigan's World Championship *(Various)*	Activision
19	(11)	Caves of Doom *(Spectrum/C64/Amstrad)*	Mastertronic
20	(12)	Way Of The Exploding Fist *(Various)*	Melbourne House

Figures compiled by Gallup/Microscope

Readers' Chart No 61

1	(1)	Commando *(Spectrum/C64)*	Elite
2	(2)	Elite *(Spectrum/C64/BBC)*	Firebird/Acornsoft
3	(3)	Winter Games *(Spectrum/C64)*	Epyx/US Gold
4	(6)	Yie Ar Kung Fu *(Spectrum/C64/Amstrad/BBC/MSX)*	Imagine
5	(4)	Lord of the Rings *(Spectrum/Amstrad)*	Melbourne House
6	(9)	Rambo *(Spectrum/C64)*	Ocean
7	(5)	They Sold a Million *(Spectrum/C64/Amstrad)*	Hit Squad
8	(–)	Saboteur *(Spectrum)*	Durell
9	(–)	Monty on the Run *(C64)*	Gremlin Graphics
10	(–)	Swords and Sorcery *(Spectrum)*	PSS

Winning Phrase No 61 "I'll win this time or eat my slogan", from Michael Jeans of Chelmsford in Essex who wins £25

Now voting on week 63 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU.

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's Readers' Chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Voting for Week 63 closes at 2pm on Wednesday February 19, 1986. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name .... **My top 3: Voting Week 63**

Address .... 1. ....

.... 2. ....

.... 3. ....

My phrase is: ....

New Releases

QL JUSTICE

At last! A QL game that looks like it might do the machine some justice. It comes not from Sinclair in one of those black and silver boxes but from Datalink Systems in Wales in a well, not entirely wonderful, garishly coloured job.

Caution first, the game isn't very original and you probably could have it with a bit of programming effort on a Commodore or Spectrum (in two colours), but nevertheless on loading it up your first reaction is more "hey, wow" than "Oh God let's get the Spectrum out"

It's a sort of 3D *Pacman* with a piece of green slime in place of the gobbler and (to begin with) two marbles trying to trounce you. Your food is a series of little pink pyramids laid out on a maze seen in roughly the same perspective as the rooms of *Knight Lore*.

Although the collision detection seems a little ropey, the animation is generally smooth. I particularly like the way the slime shlurps along in a series of squidgy flops. The maze layout changes on each level and gets more interesting (not to say difficult) with steps and other features.

It's addictive, loads quickly and is full of nice touches like a save hi-score facility and Megacalc IV – a mock spreadsheet which is intended to fool bosses should they catch you mid-game. Wonderful and, by QL standards, relatively cheap

Program *3D Slime*
Price *£12.95*
Micro *QL*
Supplier *Datalink Systems*
Glangors
Ynyslas
Borth
Dyfed
SY24 5JU

A GAME FOR THE SINCLAIR QL

DATALINK SYSTEMS (WALES)

BAD TASTE

Whatever else Central Solutions is it's big on quantity. In one fell swoop something like 20 titles turned up. The company also concentrates on budget titles – £1.99 each or £2.99 in double packs. The vast majority are adventures, *Quilled* with no credit, at least on the ones I looked at.

In such a mass of tapes it was no surprise that *Father of Darkness* (do you have what it takes to overcome the mad leader of Nazi Germany?) should catch my eye. The cover features the mad leader himself giving one of his famous waves and the title screen has such cheerful little

Pick of the week

UNDER ATTACK

Zoids on the Spectrum was a good and surprisingly strategical game. On the Commodore 64 it's a marvellous hybrid of blasting things to bits and complex strategic implications.

The basic plot is the same as the Spectrum version – searching for the pieces of the all-powerful Zoidzilla. Using an icon based command system you control your own (goodyish) Zoid and must do battle with the hordes of red Zoids.

The icons represent various options like movement (a map scrolls in the central section of the screen), scanners (which reveal what object is where), missile attack systems, mines and spy robots.

The business of finding the various city domes where the Zoidzilla pieces are kept is simple, but attacking the city successfully, and more especially attacking subsequent cities is not. A city under attack will send warning messages to other cities and thus forewarn them of your imminent arrival, making later battles all the more difficult.

Stopping the cities from communicating with one another forms a significant sub-section to the game and involves features not found on the Spectrum version. There is an option to try to jam the city radio transmissions using an interference beam. This involves much juggling with icons representing wave forms, trying to match your frequency with that of the city transmission.

Another feature not found on the Spectrum version is an option to drop spy pods. These are placed in key locations and report the presence of a Zoid when it crosses their path. Again, it enables you to plan your attacks and stop reinforcements from reaching their destination.

This all happens in extremely tasteful graphic windows to a soundtrack by Rob Hubbard which may be the most recent best-he's-ever-done in a whole series of best-he's-ever-dones. It sounds like a miserable Russian folk song as performed by Joy Division.

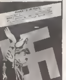
Zoids is totally wonderful and original, which is about 3000% more than anyone could possibly have expected from a licensing deal on a bunch of plastic toys.

Program *Zoids*
Price *£8.95*
Micro *Commodore 64*
Supplier *Martech*
Martech House
Bay Terrace
Pevensey Bay
East Sussex
BN24 6EE

This Week

Program	*Type*	*Micro*	*Price*	*Supplier*
Runestone	Ad	Amstrad	£7.95	Firebird
Rasputin	Arc	Amstrad	£7.95	Firebird
Tau Ceti	Arc	Amstrad	£9.95	CRL
Degas	Ut	Atari ST	£39.95	Antic Soft
Crack It Towers	Arc	BBC	£9.95	Mirrorsoft
Fleet Street Editor	Ut	BBC	£39.95	Mirrorsoft
Runestone	Ad	Commodore 64	£7.95	Firebird
Gerry the Germ	Arc	Commodore 64	£7.95	Firebird
Kung Fu Master	Arc	Commodore 64	£9.95	US Gold
Rasputin	Arc	Commodore 64	£7.95	Firebird
Zoids	Arc	Commodore 64	£8.95	Quicksilva
3D Slime	Arc	QL	£72.95	Firebird
Devpack QL	Ut	QL	£39.95	Hisoft
Super B	Ut	QL	£29.95	Hisoft
Yabba Dabba Doo	Arc	Spectrum	£8.95	Quicksilva
Costa Capers	Arc	Spectrum	£7.95	Firebird
Crack It Towers	Arc	Spectrum	£9.95	Mirrorsoft
Gerry the Germ	Arc	Spectrum	£7.95	Firebird
Play your Cards Right	Arc	Spectrum	£7.95	Britannia
Rasputin	Arc	Spectrum	£7.95	Firebird
The Giddy Game Show	Ed	Spectrum	£9.95	Mirrorsoft
The Giddy Game Show	Ed	Spectrum	£9.95	Mirrorsoft

Key Ad – adventure S – strategy-simulation
Arc – arcade Ut – Utility Ed – education



comments as "death to Nazis".

Bad taste aside, there are other, more significant, reasons to object to the game The main problem is that half the text is unreadable with extraordinary colour combinations like yellow text on a red background

Much of it was impossible to understand on our monitor, so it may be worse on an ordinary TV

Apart from this major obstacle the adventure seems marginally more interesting than first appeared

It's played out on a grand scale as you travel through time from the age of Merlin to defeat Hitler by taking the magic sword Excalibur from him

What I could read of the game seemed moderately atmospheric and I had some impulse to continue The nasty colour combinations defeated me, though – maybe in black and white you can make a game of it, but I really can't understand why Central Solutions didn't go to the minimal trouble of sorting out the text display before putting the game out

Program *Father of Darkness*
Price *£1 99*
Micro *Spectrum*
Supplier *Central Solutions, 500 Chesham House, 150 Regent Street, London W1R 5FA*

IN THE PAST

With *Back to the Future*, Electric Dreams seems to be living in the past Although one can imagine that when first conceptualised the game augured well, in reality the game mixes a few half realised good ideas with a severely restricted playing area and limited graphics which make it look, frankly, dated.

The idea is quite novel and based firmly on the film The crux of the game is to make your parents fall in love You are Marty sent back in time to the days when your parents were young

Your existence depends on your parents, George and Lorraine, meeting and falling in love, the problem is that your youthful mother (to be) is far more interested in you than your father (to be)

This tricky programming concept is achieved by you persuading the two animated characters representing your parents to stand still long enough in one place to, um, get to know one another properly.

The business of getting George and Lorraine in the same place is the objective of the game To persuade your parents and other characters to do as you wish means finding and using a variety of objects – electric guitar, alien suit, coffee, love poems, skateboard, etc – to fix them in certain spots, follow you or leave you alone

Simplified somewhat, you want your mother to stay in one place, not follow you and your father to stay in the same place as your mother Get the idea? You could call it a strategy game of sorts

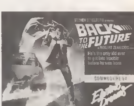
The problem is that the playing area consists of half a dozen or so locations and beyond picking up and dropping the objects, there is little else to do Generally the graphics are reasonable, but not astounding and the soundtrack is only fair in a market used to the likes of Rob Hubbard

True, there are some rather impressive digitised pictures which dissolve as your existence is threatened more and more (by your parents failing to meet), but they don't add up to much when you play the game for the third time

There just isn't enough to *Back to the Future*, not enough locations and not enough variety of game play

My strongest impression is of a noble attempt to do something original and inventive which has failed and left us with a game of the past The future seems to have gone backwards

Program *Back to the Future*
Price *£9 95*
Micro *Commodore 64*
Supplier *Electric Dreams, 31 Carlton Crescent, Southampton, Hampshire, SO1 2EW*



This Week

Ariolasoft, Asphalte House, Palace St, London W1 **Britannia,** Unit M28, Cardiff Workshops, Lewis Road, Cardiff C11 5EB 0222 481135 **CRL,** CRL House 9 Kings Yard Carpenter s Road London E15 2HD 01-533 2918 **Firebird,** Wellington House Upper St Martin s Lane, London WC2H 9DL, 01-379 6755 **Hisoft,** 180 High Street North, Dunstable Beds LU6 1AT, 0582 696421 **Mirrorsoft,** Mirror Group Holborn Circus London EC1P 1DQ, 01-353 0246 **Quicksilva,** Palmerston Park House, 13 Palmerston Road, Southampton, Hampshire SO1 1LL, 0703 21069 **US Gold,** US Gold Unit, 10 The Parkway Ind Centre Heneage Street Birmingham B7 4LY 021 359 3020

Ziggurat

A month or so ago I attended the launch of Acorn's new Master series micros. I came away from it feeling rather sad since the machines mark the company's move away from the home market, where it made and then lost a fortune.

Of course, it came as no surprise to hear its managing director Brian Long extolling the virtues of the Master as a professional, educational, scientific and business tool. Nevertheless, there remains a feeling that Acorn, in retreating to the safety of the educational stronghold where it has around 85 per cent of the market, has changed. When Chris Curry and Hermann Hauser set up Acorn six years ago it certainly wasn't as a manufacturer of schools micros like RML. They were looking for something bigger, broader. They wanted to make waves around the world with the ground-breaking BBC machine.

For a while they did, but where other manufacturers managed to offer more or less, Acorn managed to hold up its prices. A feat which was largely responsible for Acorn's much-publicised troubles last year.

So now we have the Master series. First impressions are that it's still too expensive. Why buy an 8-bit 128K Master when you can buy a 512K 68000 machine for about the same outlay?

The reason for buying a BBC Master to use as a home computer can only be software compatibility. BBC micro programs run, for the most part, on the Master 128 so the machine has a substantial library of software.

But, it is this compatibility that is the downfall of the machine. The BBC's insistence on software compatibility has frozen the Master 128 in 1982. I cannot see much software being written which takes advantage of the 128's additional memory. Software houses would rather write for the substantial user-base of the BBC B and will regard Master compatibility as an unexpected bonus and nothing more. Acorn is trapped with a machine which costs £500 and which for the most part will only ever be used as a BBC B.

Compatibility is very much a two-edged sword. With a monitor and disc drive, the Master 128 costs the same as a 512K 16-bit Atari ST. Sure, there isn't much software for the ST yet – it doesn't have the cushion of software compatibility with a previous model. Neither does it have the mill-stone of compatibility. What ST software there is takes full advantage of the 16-bit processor and oodles of contiguous memory. Sad to say, any comparison between the ST and the Master 128 is laughable.

With the Master 512, Acorn has nodded in the direction of Atari and produced a mouse-based system which, like the ST, runs Digital Research's Gem operating system. The Master 512 runs the 80186 processor rather than the 68000, so uses the IBM version of Gem. Here again, Acorn has problems. Direct PC DOS compatibility via DOS Plus is highly questionable. One thing is certain, the Master 512 is no IBM clone and its PC compatibility will be limited. So what does the Master 512 have left? It will run application programs written in C and running under Gem. Gem is newish and as yet there isn't much Gem material around. In any case, without a high degree of IBM compatibility the Master 512 cannot be considered as a serious business contender.

Not the home market. Not the business market. What is left? Only the small niche markets: scientific, industry and education.

No matter which way you turn it, it is hard to see Acorn recapturing past success with the Master series, which with its 8-bit front end and 16-bit co-processors, is an overly complicated way of cracking an egg.

Acorn is plugging expandability as the range's main strength. Fine, providing people buy the Master 128. But I have this sneaking feeling that most of the people who might be interested in the Master series are already BBC B owners. To ask them to give up their machine and buy a new £499 micro, just to be on the bottom rung of an expansion system of dubious worth may be asking too much.

Why, oh why aren't the Master's co-processors compatible with the old BBC B? If the 512K Master board with Gem and mouse had worked with the BBC B, then Acorn would certainly have had a big market for its model.

What a missed opportunity.

David Reilly

Puzzle

Puzzle No 198

I have ten plastic discs, each of which bears a single digit from zero to nine. No two counters has the same digit on it.

Below I have placed seven of these counters (number sides down) to form a long multiplication. I have not bothered filling in the intermediate lines, but the product consists of six *identical* digits (denoted by the Ps).

```
  OOⓧO
   OOO
------

------
PPPPPP
------
```

Now, if you knew the value written on the disc marked with an 'x' you could determine the values of all seven of the discs – but I don't propose to tell you what this value is.

However, you can still find the answer. What is it?

Solution to Puzzle 196

The number is 45360 which has 100 divisors.

The program tests each number in the range 45000 to 45999 and counts the number of whole number divisors in each case. Note that it is only necessary to divide by numbers up to the square root of the number being tested, as each factor *below* the square root value will have a complementary factor *above*. Thus, the variable (T) which counts the divisors is incremented by *two* to take this into account.

```
10 FOR N=45300 TO 45599
20 LET T=0
30 FOR D=1 TO SQR(N)
40 IF N/D=INT(N/D) THEN LET T=T+2
50 NEXT D
60 IF T=100 THEN PRINT N
70 NEXT N
```

Winner of Puzzle No 196

The winner is C K Tame of East Grinstead, Sussex, who will receive £10.

Rules

The closing date for Puzzle 198 is March 12.

The Hackers

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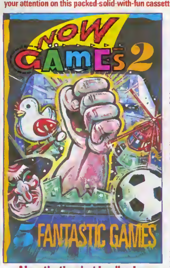

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